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EXECUTIVE SUMMARY

SURVEY AND EVALUATION

OF THE

PHYSICIAN EXTENDER REIMBURSEMENT EXPERIMENT

Submitted to

Office of Policy, Planning and Research
Health Care Financing Administration
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  - Arthur Jacobs, MD, Tufts New England Medical Center
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- A group of 13 professionals currently teaching and practicing as nurse practitioners or physician assistants

  - Barbara Brodie, PhD, RN, NP
  - Gloria Clemens, BS, PA
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Joseph Romm
Project Director

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I. INTRODUCTION

The Physician Extender Reimbursement Study is a nationwide research effort conducted by the Social Security Administration, now the Health Care Financing Administration (HCFA), and authorized under Section 222 (b)(1) subpart (G) of the Social Security Amendments of 1972 (P.L. 92-603).

The Amendments authorize experimentation to determine (1) the circumstances under which Medicare reimbursement should be made for the services of physician assistants* and nurse practitioners (who are referred to as "physician extenders") and (2) the most equitable and noninflationary reimbursement methods and amounts of such reimbursement.

The HCFA's Physician Extender Reimbursement Study is designed to meet the goals of this authorization. It has been underway for over two years. The major components of the study are:

- a baseline survey to obtain data from all practices participating in the study;
- a reimbursement experiment in which participating practices employing PE's are assigned to various methods and amounts of experimental Medicare reimbursement for PE services;
- evaluation activities to arrive at a description of the quality of care provided in participating practices, practice costs, and on-site validation of selected portions of the baseline survey.

Implementation of the third component, the evaluation phase, was awarded competitively to System Sciences, Inc. This contract started on October 1, 1976. This report summarizes the methodology, results and evaluative analyses accomplished under the contract.

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*The term PA, as used in this summary, includes both physician assistants and Medex.

A. BACKGROUND AND OBJECTIVES OF THE STUDY

The development of a Medicare reimbursement mechanism and formulae for Physician Extender (PE) services would be a prime catalyst in the acceptance and use of the PE in primary care settings. In the current time frame, there could be as many as 9,000 PA's delivering primary care at varied levels of independence. While this represents a tremendous growth rate during the past 5 years, principally due to Federal support of Nurse Practitioner (NP) and Physician Assistant (PA) training programs, it still is small relative to the 200,000 physicians in office-based practices.* Recognizing that approximately half of these are engaged in primary care (53,000 general practitioners, 18,000 pediatricians and 42,000 internists),** the primary care PE's still represent less than 10 percent of the primary care resource at the present time. The Medicare reimbursement for PE services could be the catalyst to increase the impact of PE's several-fold in the next decade and to take a giant step towards solving the maldistribution of available primary care.

The Medicare PE reimbursement study is designed to address several important issues which should be resolved before Federal reimbursement policy for PE services is altered. These include assurances that:

- The quality of care provided by PE's is at least as good as that provided by physicians;
- Payment for PE services does not accelerate the rate of increase in the cost of health care; and
- PE's provide services which have been deemed to be legal by the jurisdictions in which they practice.

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* National Center for Health Statistics, DHEW, Health Resource Statistics, 1974, p. 176.

** Ibid., p. 180.

The HCFA experimental design meets these obligations through the development of:

- A baseline data set of primary practices (collected by the University of Southern California), both with and without PE's, to compare practice characteristics in terms of patients, services provided, charges for services -- all prior to experimental reimbursement for PE services;
- A set of reimbursement formulae with sufficient range of reasonable rates to determine whether the reimbursement formula affects the use of the PE as a primary provider; and
- Reiterative readings, through total practice counts and log-diaries, of the changes in MD/PE practices and procedures which may be attributable to PE Medicare reimbursement;

and through this evaluation contract:

- A three-pronged approach to assessing quality of the care provided in participating practices, i.e., by interview, observation, and records review;
- A set of data on practice costs, particularly those attributable to the PE in the practice;
- Onsite validation of the self-reported practice characteristics and procedures reported in the USC log-diaries; and
- Assessment of the legality of PE activities.

B. SPECIFIC CONTRIBUTIONS OF THE EVALUATION EFFORT

The specific objectives of the evaluation effort were met by applying previously designed evaluation techniques, modifying others and developing and testing several new ones. Thus, the effort contributed both methodology and analytic results in the general area of ambulatory care, and in the specific area of physician extender practices.

In methodology development the following approaches were taken:

- For the quality of care assessment, we adopted a tracer disease approach, modifying a technique developed by the UCLA for an EMCRO quality of care analysis. Our modification was essentially one of

simplification and contraction for application in office practice settings. This supplemented the questionnaire interviews with both physicians and physician extenders addressing quality of care issues as well as the physician's rating of physician extender performance of a range of tasks characteristic of general and family practices.

- Validation of baseline data reported to USC by our sample of participating physicians and physician extenders was performed essentially through office logs and medical record review using data acquisition protocols modified from earlier reports/records validation studies performed by System Sciences, Inc.

- Cost data acquisition and analysis methodology addressed total practice costs, functional costs within the practice, and costs identified to the use of physician extenders. Again, the methodology was a modification of earlier methods used for ambulatory care costs by System Sciences, Inc.

Detailed discussion of the evaluation methodology is provided in Chapter II and Appendix A of the Final Report.

With regard to evaluation and analysis results, the study provides the basis for:

- determining the impact of the use of physician extenders on the access to and the quality of care in ambulatory care settings,

- establishing the costs of employing physician extender(s) in ambulatory care settings and related impact on workload and administrative burdens,

- arriving at accuracy rates and confidence levels for the data reported by physicians and physician extenders in the baseline study, which will be used to generalize the impact of the reimbursement experiment,

- initial measurement, in practice, of the degree to which physician extenders substitute for physicians in ambulatory care tasks, the degree of their independence in the practice setting and quality of their performance.

A summary of our analysis plan, evaluation findings and conclusions are presented in the following sections.

II. ANALYSIS PLAN

The following summarizes the sampling framework and basic analytic plan used in this evaluation effort.

A. SAMPLING PLAN

1. Respondent Universe

The sample practice populations addressed by this evaluation study are the PE Reimbursement Practices and the Baseline Comparison Practices.

- o PE Reimbursement Practice Population: A subset of the baseline population responding to the USC baseline survey. These practices completed the baseline, agreed to accept reimbursement for PE services under one of the assigned reimbursement formulae, and were aware of the possibility of being site visited for data collection and evaluation purposes.
- o Baseline Comparison Practice Population: A group of medical practices which do not employ PE's but which match the Baseline PE Practice Population on selected practice characteristics, and satisfactorily completed the baseline phase of the study.

2. Sampling Framework

Three characteristics served as the basis for stratification of the PE Reimbursement Practice population. Selected to best permit analysis of anticipated variability in access, quality of care, and practice costs, these are:

- o PE Type (NP or PA),
- o Health Resource Area (Rich or Poor),*
- o Practice Arrangement (Solo or Non-solo).

* Based on critical medical manpower shortage areas.

For purposes of the HCFA reimbursement experiment, a "practice" is defined in the baseline, reimbursement and evaluation phases as a single MD and the PE's supervised by him/her, regardless of the practice arrangement.

We had anticipated selecting a stratified random sample of 70 PE Reimbursement Practices based on the three strata. However, the population from which the sample was to be drawn, i.e., the PE Reimbursement Practice population, was not of sufficient size to permit random sampling. In order to complete the data collection phase, on time, and thus meet analysis and report submission deadlines, it was necessary to accept the first 70 PE reimbursement sites which agreed to a site visit. Our potential pool of PE reimbursement practices encompassed a total of 96 eligible practices by the end of our site visit phase in mid-October 1977. Of the 96, 91 were contacted; 70 agreed to participate in this phase of the study; 21 refused or were unsuitable to visit for various reasons.

The 50 comparison practices were selected by distributing the respondent baseline comparison practices in a 2x2 matrix according to (1) practice arrangement and (2) health resource area rich or poor. We then matched the baseline comparison practice population to the selected reimbursement practices with respect to geographic location. In brief, a comparison practice which most closely resembled a PE reimbursement practice in general characteristics as well as geographic location was selected for the comparison practice sample.

Table II-1 presents the sample cells in this sampling framework for both PE reimbursement and comparison practices. It is clear from the distribution within sample cells that the resource rich/resource poor stratification match was impossible to attain. The predominant number of comparison practices participating in the USC baseline survey and identified as matched to study practices were in resource rich areas. (The strata match for solo/non-solo practices was exact.) The impact on the analysis phase was to eliminate any evaluation of differences in practice performance between rich and poor resource location.

TABLE II-1

SAMPLING FRAMEWORK

Number of Practices by Sample Cell

Practice Type		PE Reimbursement		Comparison	
		Resource Rich	Resource Poor	Resource Rich	Resource Poor
Solo	NP	3	4	13	2
	PA	11	3		
Non-Solo	NP	13	8	33	2
	PA	23	5		

SUMMARY OF SAMPLE CELLS

Sample Strata	PE Reimbursement N	PE Reimbursement %	Comparison N	Comparison %
Total	70	100	50	100
Solo Practices	21	30	15	30
Non-Solo Practices	49	70	35	70
Resource Rich	50	71	46	92
Resource Poor	20	29	4	8
NP Practices	28	40		
PA Practices*	42	60		
Nurse Practitioners	37	39		
Physician Assistants	38	61		

* Includes 12 Medex practices, 17 percent of total.

3. Site Visits

Site visits were scheduled according to "time in reimbursement," i.e., the longer a practice had been in the reimbursement experiment, the more likely it was to be scheduled for an earlier site visit. All site visits to PE reimbursement and comparison practices were completed in the period May 1, 1977 through October 20, 1977.

Data acquisition on site at each of the study and comparison practices visited was accomplished in most instances by a three-person team consisting of an MD (System Sciences, Inc. staff or consultant), an NP or PA consultant, and a System Sciences, Inc. staff Health Services Analyst (HSA). Data acquisition responsibilities within the System Sciences, Inc. team were assigned as follows:

- MD -- MD and PE interviews, PE task analysis, practice observation, assist with tracer disease data extraction and validation of baseline data.
- PE -- tracer disease data extraction, assist with PE interviews if multi-PE practice, validation of baseline data.
- HSA -- cost data acquisition, validation of baseline data, assist with tracer disease data extraction and interviews.

The site visit was usually scheduled for a full two-day period for each practice.

B. BASIC ANALYSIS PLAN

The overall analytic approach was to provide comparison sets between PE reimbursement practices (SMD) and comparison practices (CMD), between solo and non-solo practice arrangements, and between SMD practices employing NP's and those employing PA's. The stratified sampling approach, presented above, allows us to aggregate the several sample cells into the strata desired for our analytic framework. This framework is diagrammed below.

Arrangement	Practice Type	
	PE Reimbursement	Comparison
TOTAL	1	2
Solo	3	4
Non-Solo	5	6
NP	7	
PA	8	

The comparison sets are then 1:2, 3:5, 4:6, 7:8 and in some instances 3:4 and 5:6. There are sufficient N's in each of these strata to allow valid comparison. The tests for significance used in the analysis are Chi-square and the t-tests (student's & matched pairs), and linear correlation, where indicated.

A detailed presentation of the methodology used and the several caveats in interpreting the resultant data is provided in the full report.

III. EVALUATION SUMMARY

This section provides a distillation of the findings of the evaluation effort. The detailed analyses supporting these key findings are presented in Section IV of the Final Report.

A. PRACTICE DESCRIPTIONS

The sample of study practices participating in the reimbursement experiment and the sample of comparison practices have the following characteristics:

- Comparison practice MD's were somewhat older than study practice MD's, an average 48 vs. 45 years; and had been in practice longer, an average 20 vs. 15 years.
- A larger proportion of the comparison MD's were board certified, 72 to 55 percent.
- Although there was wide variation, study physicians reported a median value of 20 percent of their time spent on PE-related activities.
- Physician assistants in the study practices were somewhat younger than the nurse practitioners, an average 33 vs. 37 years; but had practiced as a PE longer, 33 to 26 months, on the average.
- Generally, physician assistants reported more hours per year in formal continuing education than nurse practitioners, 73 percent with over 50 hours vs. 55 percent with over 50 hours. There were no significant differences in continuing education hours reported by study and comparison physicians.
- Additionally, nurse practitioners report spending more time on administrative duties in the practice than do physician assistants.

B. ACCESS

- The majority of comparison practices maintained office hours six days per week compared with five days per week for the majority of study practices. This was further reflected in Saturday office hours with 80 percent of the comparison practices maintaining Saturday office hours versus 50 percent of the study practices. This difference does not carry over to evening hours (office hours after 5 p.m.) in that approximately half of both study and comparison practices had no evening office hours.

- Patient access was viewed from the number of patients reported seen by physicians and physician extenders. The significant differences follow:

  - Among study physicians, solo physicians report seeing more patients than do non-solo physicians, 191 vs. 107 per week, on the average.

  - The inverse is reported by comparison physicians with non-solo MD's reporting 146 patients per week, on the average vs. 117 per week for solo MD's.

  - One-fourth of the study physicians report seeing 200 or more patients per week vs. one-sixth of the comparison physicians. Solo study physicians accounted for the greatest difference, with 48 percent reporting seeing 200 or more patients as contrasted with 7 percent of the solo comparison physicians.

  - Both NP's and PA's report seeing fewer patients than their supervising physicians. However, PA's report seeing substantially more patients than do NP's, an average 104 vs. 68 per week.

  - Both MD's and PE's make very few house calls with the physicians averaging less than two per week; the NP's, and PA's three per week. Approximately one-fourth of the MD's and NP's, and almost one-half of the PA's, reported making no house calls in an average week.

C. QUALITY OF CARE

This critical evaluation issue is viewed from three vantage points: the impact of the PE on the practice, PE performance as rated by their supervising physicians, and tracer disease quality of care ratings by System Sciences, Inc. evaluation team physicians for study and comparison practices. It is emphasized that the objective of the evaluation was to compare quality of care between

study practices with PE's and comparison practices with no PE's. The objective does not include arriving at an absolute measure of the quality of care in ambulatory care settings.

1. Impact of the PE on the Practice

- The major reasons given by study physicians for hiring a PE were to decrease the work pressure, to spend more time on complex cases, and to increase the amount of patient education provided. They reported that these were indeed the major effects obtained from hiring the PE, as well as an increase in the range of services available to their patients.

- It is important to note that income improvement was not reported to be an important consideration in hiring a PE. Study physicians were well satisfied with their income before hiring a PE and hiring PE's had no significant impact on income satisfaction.

- A further impact was to bring the study physician's perceptions, after hiring the PE, closer to those of the comparison physician:

  - they reported having the right number of patients rather than too many,

  - they were satisfied with practice conditions,

  - they felt less time pressure in the practice, allowing ample time for the full range of practice functions.

- Overall, NP's and PA's were satisfied with their roles and practice situation, use of their capabilities and growth opportunities.

2. PE Performance

This analysis compares PE's in study practices to RN's (or LPN's) in comparison practices as well as comparing NP's to PA's over a set of 58* tasks grouped into five categories: physical examination, office surgery, laboratory procedures, patient education and counseling/instructing patients.

- As expected, PE's are reported capable of performing from 70 percent (office surgery) to 97 percent (physical exam) of all tasks listed compared with a range of 11 percent (physical exam) to 60 percent (patient education) of tasks for office nurses in comparison practices.

*Four additional tasks categorized as "other medical" were excluded from this analysis.

- Supervising MD's report less supervision of NP's than of PA's, although both groups were given only limited or minimal supervision for over 80 percent of the practice tasks rated.

- Supervising MD's rated the task performance by their PE's as good or excellent, with PA's so rated for over 90 percent of the tasks performed and NP's so rated for between 85 and 90 percent of the tasks performed.

- In sum, both NP's and PA's received high marks from their supervising physicians with NP's requiring less supervision, and PA's rated somewhat higher in task performance.

3. Tracer Disease Ratings

Three tracer conditions were selected for analysis: urinary tract infection, adult onset diabetes mellitus and essential hypertension. These were selected (rather than self-limiting acute illnesses such as upper respiratory infections) because they require medical attention, usually over extended time periods, and because diagnostic and therapeutic procedures are well established. Tracer abstractions from the medical records were evaluated objectively (explicit criteria) and subjectively (implicit ratings). In all, 994 tracers were rated for study practices and 707 for comparison practices. Significant differences were identified:

- Study practices, overall, received a higher proportion of 'adequate' ratings (both implicit and explicit) than did comparison practices.

- In both study and comparison practice sets, non-solo practices received a higher proportion of 'adequate' ratings than solo practices.

- Within the sample of study practices, those with NP's received a higher proportion of 'adequate' ratings than did those with PA's. (Note that NP's reported seeing fewer patients per week than PA's, III.B., above.)

- Review of matched ratings, explicit and implicit, for each tracer abstraction disclosed a high degree of consistency ranging from two-thirds to three-fourths of the ratings, by tracer disease.

D. COST ANALYSIS

Practice costs were analyzed in terms of dollar outlay, dollar distribution to functions (patient care, administration and other) and to expense categories (personnel, laboratory, rent, utilities, supplies, etc.). For study practices, cost attributable to the PE being in the practice were identified. Major findings are:

- Ambulatory care practices, study and comparison, allocate their resources essentially in the same manner despite significant differences in organization and practice arrangements. On the average, personnel costs account for 73 percent of total practice costs, with primary providers accounting for approximately 50 percent of total practice costs.

- Similarly, when practice costs are allocated to specific functions, study and comparison practices are remarkably close. Somewhat over 70 percent of costs are allocated to patient care and approximately one-fourth of total costs are expended on practice administration. This 3:1 ratio was found in all of the sample cells analyzed.

- PE-related costs, based on physician estimates of how they allocate their own time plus actual PE costs, amount to a surprisingly high proportion of total practice costs. (Note that study practices averaged 1.36 PE's per MD). The PE-related cost proportion amounted to 57 percent in non-solo practices vs. 41 percent in solo practices and was higher in practices with NP's (56 percent) then those with PA's (50 percent).

Practices were analyzed in terms of the number of patient visits delivered for each $1,000 of practice costs. Study practice visits were deflated by 23.4 percent to account for joint MD-PE patient encounters. The unit of measure selected (an expression of cost effectiveness) reduces the differences based on patient throughput alone.

- Practices with PE's provide 12 percent more visits per $1,000 of cost than do traditional practices, on the average.

- Almost all of this difference is accounted for by solo practices, as there are no significant differences in visits per $1,000 of cost among study and comparison non-solo practices.

- Study practices with PA's, although providing significantly more visits than those with NP's, are only moderately more cost effective, with 5 percent more visits per $1,000 of cost.

Billings per visit to patients and third party payment sources, by provider type, amount to:

Comparison Practice MD	--	$16.48
Study Practice MD	--	15.[illegible]
Physician Assistant	--	12.02
Nurse Practitioner	--	8.13

The average bill per visit for study practices was consistent with practice productivity, taking into account the MD/NP/PA mix and their patient loads, and approximates $13.

E. LEGALITY REVIEW

Legal boundaries of the PE in the medical practice appeared to be of some concern as almost 70 percent of the sample PE's have purchased malpractice insurance. In most instances, PE's are given significant latitude and independence in prescribing, ordering laboratory tests and entering notes on office medical records. On the other hand, entries in hospital records are almost universally required to be cosigned by the supervising physician.

While each of the 50 states have Nurse Practice Acts, approximately 30 have revised the legal definition of nursing to reflect the expanding role of the profession. The legal situation for PA's is somewhat different, as professional practice acts are seen as necessary for this new category of health professionals. At least 37 states have enacted such legislation, with varying limits for certification, supervision, and maintenance of competence. We believe that for both NP's and PA's the confused and different statutory requirements make it difficult for physicians to know the precise legal boundaries of PE practice.

F. VALIDATION OF THE USC BASELINE DATA

In order to obtain some insights into the reliability of the self-reported data provided by PE practices and comparison practices in the USC baseline survey, a data validation effort was accomplished during practice site visits. Data were validated using the practice medical records, appointment logs and billing records.

Overall, the accuracy of reporting was good, with most reported data elements found to be highly consistent with the documented record (approximately 80 percent). Diagnostic and therapeutic procedures were reported less accurately principally due to misinterpretation of log diary reporting instructions, and were consistent with the records in approximately two-thirds of the patient visits validated.

KEY FINDINGS

The study addressed the impact of the use of PE's in general ambulatory care practice: quality, performance and costs. The most salient conclusions are:

- Practices with PE's scored higher in quality of care ratings than did comparison practices without PE's.
- PE task skills are rated at a high level and physician supervision of PE's in the ambulatory care practice is at a relatively low level. There does not appear to be significant variation in the use or performance of NP's and PA's.
- The addition of PE's to a practice increases the supervising physician's satisfaction and eases his/her perceived workload. In most instances, the range of patient services available in the practice is increased.
- Average charges per visit to the patient or third party payors are lower in practices with PE's than in non-PE practices.
- The legal boundaries of PE practices vary from state to state, are continually being revised, and supervising physicians usually do not have statutory or regulatory guidance as to what can be delegated to these mid-level practitioners. However, the lack of such guidance does not appear to hinder such delegation.

There are two other significant findings which address the cost-effectiveness of the practice samples included in the study.

- Practices with PE's provide more patient visits per $1000 of practice costs than non-PE practices.
- Among those practices with PE's, solo practices see more patients than non-solo practices. The inverse is found in the comparison practices.

In sum, the use of PE's in ambulatory care settings appears to be beneficial in terms of costs, providers and patients. It is certainly an approach to improving and expanding health care delivery services that deserves support.

8. RECOMMENDATIONS FOR ADDITIONAL RESEARCH

Based on the work performed in this evaluation, data and insights acquired, we believe that there are still unanswered questions which need to be further explored. Several follow.

- The quality of care methodology used in this study was designed to arrive at relative ratings of quality between two groups of practices. Additional study is needed to determine whether this methodology, or a modification of it, is applicable to derive absolute ratings of quality in ambulatory care settings.

  Further, a more intensive analysis of the explicit ratings might identify which specific diagnostic, therapeutic or outcome 'criteria' are usually not performed in the treatment protocol.

- A serious and careful study is needed to determine why, in practices which make significant use of mid-level practitioners, individual practitioners in group practices provide a fewer number of patient encounters than solo practitioners. This has been noted in OEO and DHEW health centers, and public health clinics. Is this phenomenon a function of the individual who seeks that practice environment or the structure in which he finds himself?

- A corollary conclusion that PE practices and particularly solo MD/PE practices have many more patient encounters, needs further study in a broader context, e.g., various types of practice, team mix, etc. The results of this analysis would have value for planning the allocations of medical care resources or organizing medical care delivery structures.

- This study collected much data which need to be further analyzed for answers to some pertinent questions, e.g.,

  - Does the formal training received by physician extenders meet the performance demands of an ambulatory care practice?

  - When is the investment cost in training a physician extender recovered through income generated by the physician extender?

- If reimbursement is to be provided for PE services either via federally supported programs or other third party payors, then study is required of the rates of reimbursement which provide an economic incentive to hire PE's and still serve the national purpose of containing medical care costs and maintaining quality of care.

- Model legislation or regulatory parameters for PE's should be designed at the national level to provide guidance to states in order to minimize the diversity of current statutes and administrative regulations. The model legislation should define the roles of these practitioners and provide them with a standardized legal framework to perform those duties for which they have been trained.

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